

In the Claims:

Please enter the following amended claim set::

1. (currently amended) A method for measuring an evolution rate of ~~a gas~~
carbon dioxide from a sample, the method comprising the steps of:

~~equilibrating~~ placing a sample in gas communication with a solution
comprising an alkaline solution and a pH indicator;

permitting the alkaline solution to absorb ~~formed~~ carbon dioxide formed by
the sample in an enclosed space;

following the ~~equilibrating~~ placing step, determining from a change in the pH
indicator a time increment at which an increment of the alkaline solution is substantially
consumed by the carbon dioxide;

calculating from the time increment a carbon dioxide evolution rate.

2. (currently amended) The method recited in Claim 1, wherein the
~~equilibrating~~ placing step comprises shaking the sample and the solution to enhance
carbon dioxide absorption.

3. (currently amended) The method recited in Claim ~~[[1]]~~ 2, wherein the
shaking step comprises shaking at a fixed rate.

4. (original) The method recited in Claim 1, wherein the alkaline solution
comprises sodium hydroxide and barium chloride.

5. (original) The method recited in Claim 1, wherein the indicator comprises phenolphthalein.

6. (original) The method recited in Claim 5, wherein the indicator further comprises an ethanol solution.

7. (currently amended) The method recited in Claim 1, further comprising the step of performing a pre-equilibration comprising the steps, prior to the equilibrating placing step, of:

a. equilibrating placing the sample in gas communication with a first amount of the solution comprising an alkaline solution and a pH indicator, the first amount sufficient to absorb the carbon dioxide formed during a predetermined amount of time;

b. permitting the alkaline solution to absorb the formed carbon dioxide in the enclosed space for the predetermined amount of time; and

c. withdrawing the alkaline solution to leave a predetermined portion in the reaction chamber following the equilibrating step (a).

8. (currently amended) The method recited in Claim 7, wherein the portion ~~comprises substantially none~~ withdrawing step comprises withdrawing substantially all of the solution.

9. (currently amended) The method recited in Claim 7, wherein the ~~equilibrating~~ step (a) comprises ~~equilibrating~~ placing a sample in gas communication with a predetermined quantity of the alkaline solution and the portion comprises the predetermined quantity.

10. (currently amended) The method recited in Claim 1, wherein the ~~equilibrating~~ placing step comprises injecting a predetermined quantity of the alkaline solution into the reaction chamber.

11. (currently amended) The method recited in Claim 10, further comprising the steps of:

repeating the ~~equilibrating~~ placing, permitting, and determining step a predetermined number of times; and

averaging the time increments from the repeated ~~equilibrating~~ placing, permitting, and determining steps; and wherein

the calculating step comprises calculating from the averaged time increment a carbon dioxide evolution rate.

12. (original) The method recited in Claim 1, wherein the change in the pH indicator comprises a visualizable color change.

13. (currently amended) The method recited in Claim 1, wherein the calculating step comprises using the following equation:

$$\text{carbon dioxide evolution rate} = (0.1 \times 10^3 \times M/2)/60t,$$

wherein M is the alkaline concentration of the solution and t is the time increment.

14. (withdrawn) A device for measuring an evolution rate of a gas from a sample, the device comprising:

a sample vial having an opening into an interior space for containing a sample therein; and

a reaction chamber having an opening adapted for mating with the sample vial opening and a solution-receiving opening for receiving a solution comprising an alkaline solution and a pH indicator, the reaction chamber dimensioned for equilibrating the sample with a predetermined amount of the solution to attain a CO_2 absorption/evolution equilibrium between the alkaline solution and the sample.

15. (withdrawn) The device recited in Claim 14, wherein the sample vial has a threaded coupling adjacent the opening and the reaction chamber has a septum liner leading to the sample vial, the septum liner matable with the threaded coupling.

16. (withdrawn) The device recited in Claim 14, wherein the reaction chamber comprises a substantially transparent spherical member and the solution-receiving opening is adapted for receiving a syringe tip thereinto.

17. (withdrawn) A system for measuring an evolution rate of a gas from a sample, the system comprising:

a respirometer device comprising:

a sample vial having an opening into an interior space for containing a sample therein; and

a reaction chamber having a mixing opening adapted for mating with the sample vial opening and a solution-receiving opening for receiving a solution comprising an alkaline solution and a pH indicator, the reaction chamber dimensioned for equilibrating the sample with a predetermined amount of the alkaline solution; and

means for determining from a change in the pH indicator a time increment at which an increment of the alkaline solution is substantially consumed by the formed CO₂.

18. (withdrawn) The system recited in Claim 17, further comprising means for shaking the sample and the solution to enhance carbon dioxide absorption.

19. (withdrawn) The system recited in Claim 18, wherein the shaking means comprises means for shaking at a fixed rate.

20. (withdrawn) The system recited in Claim 19, wherein the shaking means comprises an orbital shaker.

21. (withdrawn) The system recited in Claim 17, further comprising a syringe for injecting solution into the reaction chamber.

22. (withdrawn) The system recited in Claim 17, wherein the alkaline solution comprises sodium hydroxide and barium chloride.

23. (withdrawn) The system recited in Claim 17, wherein the indicator comprises phenolphthalein.

24. (withdrawn) The system recited in Claim 23, wherein the indicator further comprises an ethanol solution.

25. (withdrawn) The system recited in Claim 17, further comprising means for withdrawing at least some of the solution following a pre-equilibration period to leave a predetermined portion in the reaction chamber.